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PILLSBURY WINTHROP, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER

FULLER, RODNEY EVAN

ART UNIT PAPER NUMBER

2851

DATE MAILED: 04/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/552,672

Applicant(s)

SEGERs ET AL.

Examiner

Rodney E Fuller

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because the first sentence: "A lithographic projection apparatus is presented." can be implied by the title "Lithographic projection apparatus". Correction is required. See MPEP § 608.01(b).

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. The patents in question are as follows:

- a. WO 97/33205 (page 2, 1st paragraph of Specification)
- b. WO 98/28665 (page 2, 2nd paragraph of Specification)
- c. WO 98/40791 (page 2, 2nd paragraph of Specification)

- d. "Microchip Fabrication: A practical Guide to Semiconductor Processing," Third Edition, by Peter van Zant, McGraw Hill Publishing Co., 1979, ISBN 07-067250-4 (page 6, last paragraph of Specification)

Claim Objections

4. Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claim 10 recites a device manufacturing method of making a specified product. Claim 11 is to the product set forth in claim 10 and is not a proper dependent claim since the product might be made in other ways. (See MPEP 608.01(n)).

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - a. Claim 6 sets forth "...wherein said first temperature controller maintains the intermediate table and the gas temperature...". However, in claim 3 the "first temperature controller" is used to "regulate a temperature of the intermediate table" and says nothing about controlling the "gas temperature." Claim 5, on the other hand, sets forth a "second temperature controller" to "regulate a temperature of said gas." Hence, it

is unclear if the applicant intends to state that the “first temperature controller” is used to maintain both the intermediate table and the gas temperature. (Underline emphasis added) If it is the applicant’s intent that both the intermediate table and the gas temperature are controlled by the first temperature controller, then it is inconsistent with claims 3 and 5.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 7, 8, 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Takizawa (US 5,471,279).

Regarding claims 1, 10 and 12, Takizawa (US 5,471,279) discloses “...a radiation system constructed and arranged to supply a projection beam of radiation (column 2, lines 2-4), a mask table provided with a mask holder for holding a mask (column 2, lines 5-6, inherent in a photolithography device that transfers a semiconductor circuit pattern); a substrate table provided with a substrate holder for holding a substrate (column 1, lines 10-11); a projection system constructed and arranged to image an irradiated portion of the mask onto a target portion of the substrate (column 2, lines 2-7); a preparatory station comprising an intermediate table on which a substrate can be positioned before transfer to the substrate table (Figure 7, ref.# A, H); an intermediate table comprising a major surface provided with a plurality of apertures (Fig. 8, ref.#

51a); and a gas bearing generator constructed and arranged to generate a gas bearing between said major surface and a substrate located thereon (column 1, lines 37-40; column 3, lines 21-28).

Regarding claim 7, Takizawa (US 5,471,279) discloses "...a position detector constructed and arranged to detect a first position of said substrate on said intermediate table; a displacement calculator for calculating a required displacement between said first position and a desired position of the substrate on the intermediate table; and an actuator constructed and arranged to move said substrate from said first position to said desired position." (See column 5, line 66 – column 6, line 7).

Regarding claim 8, Takizawa (US 5,471,279) discloses "...wherein said position detector is constructed and arranged to detect an edge of the substrate." (See Figure 1, ref.# 34)

5. Claims 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Leoff (US 3,603,646).

Regarding claim 12, Leoff (US 3,603,646) discloses "a substrate preparing device comprising an intermediate table (Fig. 1, ref.# 16) on which a substrate (Fig. 1, ref. # 22) can be positioned before transfer to a substrate table in a lithographic projection apparatus; the intermediate table comprising a major surface (Fig. 1, ref.# 20) provided with a plurality of apertures (column 2, line 49), and a gas bearing generator (column 2, line 45) constructed and arranged to generate a gas bearing between said major surface and a substrate thereon."

Regarding claim 13, Leoff (US 3,603,646) discloses "...a gas source (column 2, line 45) arranged to deliver gas through the apertures to generate the gas bearing, and an evacuation pump (Fig. 1, vacuum source) arranged to evacuate the gas from the gas bearing."

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa (US 5,471,279) in view of Doley et al. (US 6,161,311).

Regarding claim 2, Takizawa (US 5,471,279) discloses all the structure set forth in the claims except "...wherein said preparatory station comprises a gas ionizer constructed and arranged to ionize said gas." However, the use of a gas ionizer to ionize gas coming in contact with a photolithographic substrate is routine in the art as is evident from the teaching of Doley, et al. (US 6,161,311) (see abstract, lines 19-28, Doley). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Takizawa (US 5,471,279) by including a "...gas ionizer constructed and arranged to ionize said gas." The ordinary artisan would have been motivated to modify Takizawa (US 5,471,279) in the manner described above for at least the purpose of removing any static charge as described by Doley (US 6,161,311) (see abstract, lines 25-28, Doley).

8. Claims 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa (US 5,471,279) in view of Tsutsui (US 4,720,732).

Regarding claim 3, Takizawa (US 5,471,279) discloses all the structure set forth in the claims except "...wherein said intermediate table comprises a first temperature controller

constructed and arranged to regulate a temperature of the intermediate table.” However, the use of a “... temperature controller constructed and arranged to regulate a temperature” of a table which hold a substrate is routine in the art as is evident from the teaching of Tsutsui (US 4,720,732) (see abstract, lines 8-13, Tsutsui). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Takizawa (US 5,471,279) by “... wherein said intermediate table comprises a first temperature controller constructed and arranged to regulate a temperature of the intermediate table.” The ordinary artisan would have been motivated to modify Takizawa (US 5,471,279) in the manner described above so that the reliability of alignment between the pattern of the mask and the pattern formed on the wafer is improved as described by Tsutsui (US 4,720,732) (see abstract, lines 14-17, Tsutsui).

Regarding claim 5, a further difference between Takizawa (US 5,471,279) and the claimed invention is “... wherein said preparatory station comprises a second temperature controller constructed and arranged to regulate the temperature of said gas.” However, Tsutsui (US 4,720,732) discloses a temperature controller (Fig. 1, ref.# 8, Tsutsui) to control the temperature of air flowing into the substrate table. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Takizawa (US 5,471,279) by “... wherein said preparatory station comprises a second temperature controller constructed and arranged to regulate the temperature of said gas.” The ordinary artisan would have been motivated to modify Takizawa (US 5,471,279) in the manner described above to help maintain the same temperature between the substrate and the substrate table so that the reliability of alignment between the pattern of the mask and the pattern formed on the wafer is improved as described by Tsutsui (US 4,720,732) (see abstract, lines 14-17, Tsutsui).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa (US 5,471,279).

Regarding claim 4, Takizawa (US 5,471,279) discloses all the structure set forth in the claims except "...wherein said gas bearing has thickness less than 150 μ m. It would have been obvious to one having ordinary skill in the art at the time the invention was made to require the gas bearing to have a thickness less than 150 μ m, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa (US 5,471,279) in view of Ota (US 6,228,544).

Takizawa (US 5,471,279) discloses all the structure set forth in the claims except "...wherein said position detector is constructed and arranged to detect a mark on the substrate." However, the use of a position detector that is constructed and arranged to detect a mark on the substrate is routine in the art as is evident from the teaching of Ota (US 6,228,544) (see column 2, line 4). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Takizawa (US 5,471,279) by "...wherein said position detector is constructed and arranged to detect a mark on the substrate." The ordinary artisan would have been motivated to modify Takizawa (US 5,471,279) in the manner described above since it would be an obvious matter of design choice to use a mark or an edge detector, since applicant has not disclosed that using a mark detector solves any stated problem or is for any particular

purpose and it appears that the invention would perform equally well with either a mark or edge detector.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney Fuller whose telephone number is (703) 306-5641. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams, can be reached on (703) 308-2847.

A handwritten signature in black ink, appearing to read 'Rodney Fuller', is positioned above the printed name.

Rodney Fuller
Examiner

April 11, 2002